

growth and attrition of the Walrus-tusks. He observes that growth does not necessarily proceed *pari passu* with attrition, and consequently tusks of the same age may be of various lengths; the biggest tusks, *cæteris paribus*, will be those which have suffered least rubbing during the process of growth. The causes of attrition are not merely due to friction of the points upon ice studded with sand particles, but rather to the digging up of the sea-bottom when the Walrus is in search of mollusca, or when scraping rock-surfaces to detach limpets and such like. As regards the sea-bottom and shore, it is hardly possible to doubt that the Miocene (Diestien) sea, with its *Pyrula*, *Voluta*, *Cassidaria*, *Pholadomya*, and such forms, and its Teuthophagous whales (*Ziphioids*) and its huge sharks, was not an ice-bound sea. The Walrus' tusks, then, are only secondarily, and not primarily, related to its movements upon shore-ice. With no very hard rocks against which to wear down its tusks, the Diestien Walrus accordingly had them longer, of greater primitive curvature, and a greater lateral compression, as compared with the Walrus now inhabiting the seas of the northern regions.

On the Specific Identity of *Scomber punctatus*, Couch, with
S. scomber, Linn. By FRANCIS DAY, F.L.S.

[Read June 3, 1880.]

(PLATE VII.)

IN the 'Zoologist' for 1849, Mr. Couch described a Mackerel, which he had obtained the previous year in Cornwall, as "the Dotted Mackerel," *Scomber punctatus*. Prior to that period it had not been observed, while since that time it has remained unrecognized until April 21st this year, when I received a specimen from Mr. Dunn, of Mevagissey, in Cornwall, where it had been taken the previous day. I was exceedingly gratified at obtaining this specimen (which was uninjured and quite fresh), as I particularly wished to examine some of the species of British fish which are least known and merely doubtfully admitted to the rank of species. Pennant, 'British Zoology,' ed. 1776, and Fleming, 'British Vertebrates,' merely record the "Common Mackerel" (*S. scomber*) as existing in the British seas. Turton, 'British

Fauna' (1807), adds the "Spanish Mackerel" (*S. colias*) which is likewise included by Jenyns, 'British Vertebrate Animals' (1835), Yarrell, 'History of British Fishes' (editions 1836 and 1841), White, 'Catalogue of British Fishes (1851),' and Thompson, 'Natural History of Ireland (1856)—the last three authors considering *S. maculatus*, Couch (Mag. Nat. Hist. v. p. 832), as a synonym of *S. colias*. Sir John Richardson, in the 3rd edition of Yarrell's 'British Fishes,' included *S. punctatus*, Couch, as a distinct species, observing, at the same time, that, "as no second example has yet been met with, and the chief peculiarities in the Dotted Mackerel are its colours and markings, its specific rank may remain a question until the acquisition of other specimens furnish the means of investigating its internal structure." Dr. Günther, 'Catalogue of the Fishes of the British Museum,' 1860, places the *S. punctatus* among the doubtful species upon which no opinion is offered; while *S. scriptus*, Couch, which may prove to be merely another variety of the Common Mackerel, had not been described at that period.

Couch's example of the Dotted Mackerel (*S. punctatus*) was a female, 15.5 inches in length, captured in a mackerel-seine at Looe, in Cornwall, July 6th, 1848. It was erroneously said to possess an air-bladder, which, however, Couch, in his 'Fishes of the British Islands' (1863), observes was a mistake of Sir John Richardson's, the specimen having been "destitute of a swimming-bladder." He considered that it differed from the common Mackerel in that there "were scales which covered the surface of the sides and belly, where none at all appear in the common species." The example of the common species under that author's eye at the time appears to have been thickly covered with mucus; as in the specimens I have examined scales were present "on the sides and belly;" consequently, in this respect, no difference exists between the two forms. Next Couch draws attention to the length of the interspace between the dorsal fins in the two forms; but if a pair of proportional compasses is employed, it will be found that distance is identical in the two figures given in the 'History of the Fishes of the British Isles.' In short, Couch justly concludes that "the most remarkable distinction between this and the other British species of Mackerel was in the colour, which was of an uniform dark neutral tint over the head and back, without any bands or variegations; it might be termed an olive bluish-green, with green reflections at the sides; and from before

the eyes, along the back and sides to the tail, the surface was thickly covered with (black) spots of the size of a small pea, generally round and well defined, but a little larger, and elongated transversely on the summit of the back. The spots ended a little below the lateral line, and the belly was pure white; the surface between the carinations of the tail a bronzed yellow colour." Certainly if the description of the colours had been taken from the specimen I am recording, it could hardly have been more accurate; while, as it is, by such, or markings alone, that the distinction can be shown between the "Dotted" and the "Common" Mackerel, it must be conceded that the example here figured (Pl. VII.) represents the former variety.

D. 13 | $\frac{1}{11} + v$. P. 21. V. 1/5. A. 1 | $\frac{1}{11} + v$. C. 17.

Extreme length 14, to base of caudal fin 12·75, of each caudal lobe 2·25, of head 3·2 inches. Dorsal fin, length of base 2 inches, of second spine 1·3, of interspace between two dorsal fins 2·3, of base of second dorsal 1·0, of base of anal fin 1·1, length of pectoral fin 1·5. Lower jaw very slightly the longer. Eyes, diameter one fourth of the length of the head, $1\frac{1}{4}$ diameter from the end of the snout and 1 apart. The posterior extremity of the maxilla reaches to beneath the middle of the eye. Air-bladder absent. Length of intestines from pylorus to vent 10·5 inches. The example was a female, and the ova not quite mature. The number of its fin-rays, and even scales, as well as its proportions, agree so well with some British examples of *S. scomber*, that further description appears to be unnecessary, except to remark that the interorbital space is slightly broader in this specimen than some of the Common Mackerel; but I find such liable to individual variations.

The European forms of Mackerel may be subdivided, for the sake of convenience, into (1) those possessing an air-bladder and (2) those in which this organ is deficient. They are as follows:—*Scomber pneumatophorus*, which extends from the Mediterranean southwards, and *S. colias*, also a Mediterranean form, but visiting the British isles, have both an air-bladder; consequently the "Dotted Mackerel" cannot be a variety of either of those species. *S. scomber*, however, has no air-bladder, and is (excepting in colour) identical with the form under review, while it yet remains to ascertain whether the "Scribbled Mackerel," also destitute of an air-bladder, is not merely another variation in colour of the same species. Respect-

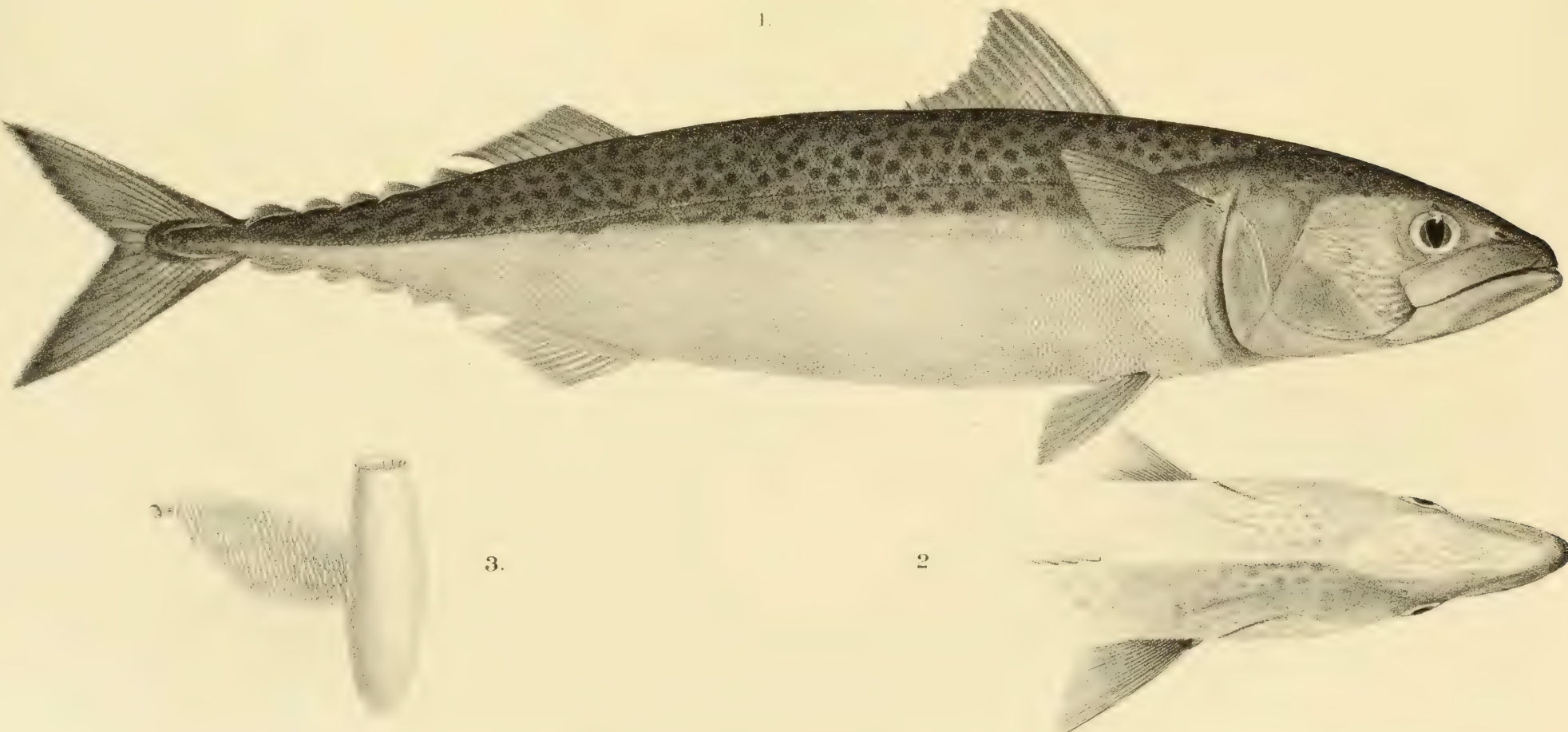
ing the variety placed by Couch in plate lxxx. below the "Spanish Mackerel" (*S. scriptus*), but which he observes that he "supposes it to be a different species," it seems to be another variety in colour of the common form, in which the first dorsal fin is a little more forward and the second spine is slightly higher, if such is not an error in the figure. He also observes that this variety "has no air-bladder;" and likewise expressed his belief (p. 82) that none is present in *S. colias*, although such has been described in Cuvier and Valenciennes's 'Histoire Naturelle des Poissons,' 1831, viii. p. 47; but not believing in its existence, Couch appears to have fallen into an error.

On two Cases of Incorporation by Sponges of Spicules foreign to them. By STUART O. RIDLEY, F.L.S., Assistant in the Zoological Department, British Museum.

[Read June 17, 1880.]

Two cases of this phenomenon, to the common occurrence of which Mr. Carter has already called attention*, have recently come to my notice while working out some Sponges from the southern hemisphere, and they seem to me to be of some interest. The one is that of a specimen assigned to the genus *Ciocalypta*, Bowerbank, in which the dermis would be almost naked (a very unusual character) but for the occurrence in it of certain long acuate spicules having a very slight elongated basal inflation or head. They are found scattered through the membrane, singly or in loose bundles. The superior ends of the main skeleton-fibres themselves reach the dermal surface, and there spread out like the branches of the date-palm; but they do not extend across the surface to the same amount as in *Ciocalypta penicillus* and *C. Leei*, Bowerbank; for here they do not meet their fellows to form the lattice-like surface meshwork which is so conspicuous a feature of those species. It is therefore in the vacant spaces left between the freely-terminating ends of the skeleton-fibres that the subcapitate acuate spicules above mentioned are found. They measure from .426 to .468 millim. in average greatest length by .011 to .01267 in thickness; they taper gradually to a fine point, and the head, which is only plainly discernible under a high power

* Ann. N. H. (4) xvi. pp. 11, 16, xviii. pp. 230, 232. Cf. also *Id. op. cit.* (5) ii. p. 358.



C. Achilles. lith.

Mintern Bro's imp.

SCOMBER SCOMBER *Linn* (var S PUNCTATUS Couch).